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## PATENT ABSTRACTS OF JAPAN

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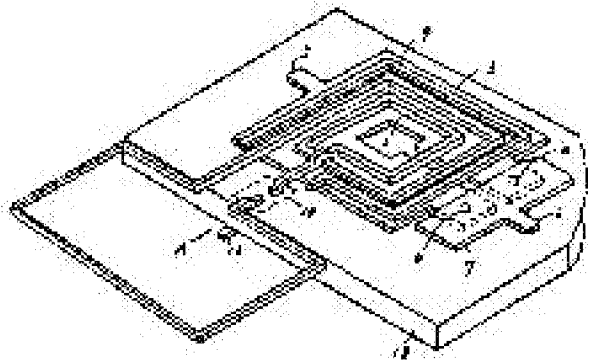
(21)Application number :	<b>62-056508</b>	(71) Applicant :	<b>HITACHI LTD</b>
(22)Date of filing :	<b>13.03.1987</b>	(72)Inventor :	<b>NAKANE HIDEAKI NISHINO JUICHI KAWABE USHIO HASEGAWA HARUHIRO</b>

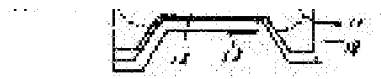
### (54) MAGNETIC FLUX SENSOR DEVICE

#### (57)Abstract:

**PURPOSE:** To facilitate a measurement of a magnetic flux by forming an area which has doped impurities of high concentration on a semiconductor substrate, providing a gate structure on the surface or the reverse side of the dope area and inserting a high dope area as a variable resistance into a magnetic flux transfer circuit by a gate voltage.

**CONSTITUTION:** One of takeoff lines of an input coil 2 is connected to one end of a resistance 10 by a high concentration impurity dope area 11 provided on a part of a semiconductor substrate 18, and to the other end, a wiring of a sense coil 1 is connected, and the other end of the coil 1 is connected directly to the coil 2, by which





a magnetic flux transfer circuit is formed. In this case, as for the substrate 18, that of impurity concentration which becomes an insulating property at a low temperature is used, and in a part of the substrate 18, a dope area 11 of high concentration is formed. Subsequently, by anisotropic etching from, for instance, the reverse side of the substrate 18, a single crystal thin film is formed, and a gate oxide film 12 and a gate electrode 13 are formed on the reverse side. By applying a voltage to this electrode 13, a carrier is collected to an area where wirings of the coils 1 and 2 are opposed, and the resistance can be made smaller than that of other area. A variable range of this resistance is determined by a shape of the opposed part of the wiring, the impurity concentration, a kind of the substrate 18, etc.